



Winter 2024





The Como-Harriet line was the last to be assigned PCCs in October 1952. The St. Paul portion of the line was abandoned in July 1953. A westbound car passes through the Como Park Station.

**Twin City Lines is published
quarterly by the
Minnesota Streetcar Museum**

P. O. Box 16509
Minneapolis, MN 55416

www.trolleyride.org
Vol. 18 No. 1

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Twin City Lines is published quarterly and is mailed to members in good standing without charge under Third Class postal permit.

The Minnesota Streetcar Museum operates the Como-Harriet Streetcar Line in Minneapolis and the Excelsior Streetcar Line in Excelsior. Its mission is to preserve Minnesota's electric railway heritage.

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The PCC cars

-Aaron Isaacs

Streetcar design evolved during the first half of the 20th century. Initially the cars were built entirely of wood. Steel underframes appeared around 1905. Between 1910 and 1915 the commercial car builders began adding steel side panels, then transitioned to all-steel bodies, although wood roofs persisted. Simultaneously, streetcar designs were lightened dramatically to reduce power consumption.

TCRT followed the trends until they didn't. They made the move to steel underframes and stopped there. They continued to build wood-bodied cars until 1917, several years after the rest of the industry had gone all-steel. They designed and built 30 of their own lightweight cars, but the bodies were sheathed in Masonite fiber board, not sheet steel. And that was it. Unlike almost every other large streetcar company, they never bought an all-steel streetcar and they made no further move toward light weight—until 1945. Essentially they skipped an entire design generation, choosing instead to rebuild their heavy wood cars.

The combination of automobile competition and the Great Depression reduced ridership to all-time lows. The street railway industry decided a great leap forward was needed to have any chance of competing. The Electric Railway Presidents Conference Committee, the heads of the biggest companies, was formed in 1931. Their goal was to pool their resources to design a revolutionary streetcar. Invitations to join were sent to the 25 largest street railways in North

America. TCRT was among the invitees, but chose not to join. They weren't alone. Kansas City, San Diego, Vancouver and Philadelphia also declined, although all eventually bought PCCs.

They were after faster acceleration and braking with a quieter and smoother ride, all housed in a modern streamlined package. Under the glamorous exterior, the cars minimized weight while maximizing acceleration and braking. Resilient wheels and cushioning materials would greatly reduce the noise, vibration and bumps felt by passengers. Instead of bare bulbs, interior lighting was diffused through lens-covered fixtures embedded in the ceiling. Floors were linoleum or rubber rather than wood. Seats were fully upholstered, but not with wicker. There were frequent vertical stanchions for standees to hold onto instead of the old leather straps. Floors were flat, eliminating the tripping hazard of the extra step from the platform into the passenger compartment. Electric heat replaced coal-fired stoves that sometimes filled the car with fumes. Safety glass replaced plain window glass that collisions transformed into dangerous flying shards.

After four years of research and development, the first production cars were built in 1935 for Brooklyn. St. Louis Car Company and Pullman emerged as the PCC builders.

Prior to the PCC, most streetcars were custom designed from the ground up. Given the perilous state of the industry during the 1930s, this was a luxury that could no longer be afforded, so a major goal of the PCC was standardizing components. That was achieved, but the street railways

still demanded some customizing. The standard length was 46 feet, but Chicago's cars were 50 feet 5 inches and Washington's were 44 feet. Width varied from 8 feet 4 inches to 9 feet (which included the TCRT cars). Some were double-ended with full controls at both ends. Some had doors on both sides of the car. Chicago's had three sets of doors on the right side. There were six different track gauges. The PCCs weren't all streetcars. Chicago, Cleveland, Boston and New York bought subway and elevated cars that used the PCC technologies.

By the time the United States entered World War II in 1941, there were 1896 PCCs in service. Another 2400 would be built before TCRT finally decided to place an order for 40 in 1944. However, that order was delayed by strikes at St. Louis Car Company.

When the war ended in 1945, PCC design took a step forward, what you might call PCC 2.0. The first generation of PCCs was dubbed "air-electric". They retained air compressors to power the brakes, doors and windshield wipers. The new cars were all electric, including the brakes. It simplified the design, eliminating a separate technology and the maintenance that went with it. The body was redesigned, with every seat having its own window. Most of the new cars added a set of small "standee" windows above the regular windows, allowing standing passengers to see out of the car. The windshield was tilted in to reduce glare and the rear was straighter and less tapered.

When production ended in 1951, 4890 PCCs had been built for North America. In addition, 1009 PCC rapid transit cars using PCC technology

Front cover: This issue is devoted to TCRT's PCC cars. They were the first new equipment since 1927, and only ran from 1947 to 1953. Sold to Newark, Shaker Heights and Mexico City, they ran in Newark until 2001. After that they found new life in San Francisco, San Diego and several trolley museums. Car 345 is at Payne and Nebraska, end of the Mississippi Street line.

were built, for Chicago, Boston, Cleveland and New York. When sales of used PCCs are included, the cars served 27 North American transit operators.

Its order delayed, TCRT decided it was time to sample the PCC technology. They arranged for one air-electric car from a Pittsburgh order, #1547, to be diverted to the Twin Cities. Renumbered 299, it arrived in January 1945.

Here's an interesting footnote. Pittsburgh ordered a second #1547 to replace the one diverted to the Twin Cities. Second 1547 was retired in 1967 and offered to the Minnesota Transportation Museum for \$100. MTM couldn't raise the money to ship it, so the deal was abandoned.

The new PCC was a hit with riders, as described in this February 17, 1945 Minneapolis Tribune story.

3000 Riders Thrilled by New Trolley

"Crowds crowded aboard the Twin Cities' new streamliner streetcar at every stop Friday, its second day of regular service. The car hauled an estimated 3000 passengers between Minneapolis and St. Paul during its first two days of operation.

And, modern miracle, people headed for the back of the car, without pleading from the conductor.

'It's this big rear window that attracts me', said Robert Morey. 'I just sit here and watch the pretty girls go by.'

Top: Car 1547 arrived at Snelling Shops in January 1945 and was posed on the transfer table.

Bottom: It entered service on February 16, and is seen here on the Interurban at 5th and Hennepin. Star-Tribune photo, Minnesota Historical Society collection.





Top left: Car 1547 showed up in this newspaper cartoon advocating route numbers. Bottom left: Repainted and now #299, the first PCC passes through the University of Minnesota on Washington Avenue. Bill Olsen photo. Above: Pittsburgh's seating arrangement featured aisle-facing seating in the front of the car, painted vertical stanchions and a conductor station at the rear door. Hennepin County Library collection. Below: Car 299 parked at Snelling Station. Forrest Johnson photo.

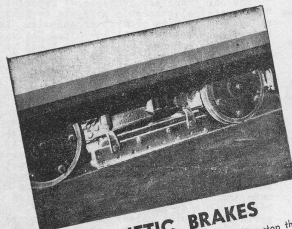


JUSTLY PROUD OF ITS NEW CARS, TWIN CITY LINES (MINNEAPOLIS-ST. PAUL) TOOK FULL-PAGE ADS LIKE THIS ONE TO INTRODUCE THEM TO THE PUBLIC.



★ SEATING COMFORT

Roomy seats are scientifically constructed for perfect comfort. Long side seats are replaced by individual chair seats.



★ MAGNETIC BRAKES

Wheel brakes are eliminated. All electric brakes stop the car smoothly and in record time. Especially important are magnetic track brakes when slippery conditions plague traffic.



★ CENTER DOOR

Entrance door is in the center of the car, permitting traffic both ways and eliminating "pushing through" and packing in the front. Doors open promptly, close safely.

TWIN CITY LINES' POLICY

TO PROVIDE more comfortable and convenient service and to do so with safety and courtesy.

TO ACCOMPLISH THIS PURPOSE: We have commenced a modernization program to secure the finest equipment and plant available . . . estimated to cost \$20,000,000 and to be completed as soon as possible. Twin City Lines is an organization of 2,500 employees, neighbors of yours and good citizens who recognize their responsibility to serve the public graciously and well, and it is our earnest desire and pride and shall be our constant effort that the service shall be a credit to these communities.

D. J. Strouse,
President

Today, thousands of people took a courtesy ride on the Twin City Line's new fleet of street cars.

Now, the Twin City Lines is proud to announce that these street cars are in actual service on the University Avenue Interurban line and that additional cars will be arriving almost every day.

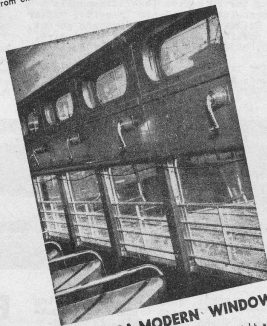
Important as these new cars are, they are only a beginning.

On its way is the \$20,000,000 program which will give to the Twin Cities the most modern, the most comfortable, the speediest and the most efficient public transit system in America.



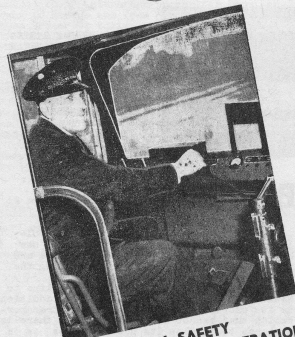
★ COMPLETELY NEW

This car is the newest and finest that American inventive genius and mechanical ability can build. It is streamlined perfection from end to end.



★ ULTRA-MODERN WINDOWS

Attractively-styled windows are weather-tight and settle-proof and a spring-loaded mechanism permits them to roll smoothly up and down.



★ MAXIMUM SAFETY IN OPERATION

Super-modern instrument panel is all manually controlled and infinitely more efficient than the older type. All starts and stops are automatic.

Car has seating capacity of 53 as compared to the former 48.

"Standeo" windows at top permit standing passengers to see out. Wider aisles and well-lighted interiors add to comfort of passengers.

Car accelerates smoothly, instantly, automatically—is much speedier.

THE TWIN CITY LINES



On Exhibition...

Take a **FREE RIDE** on America's Most Modern Street Car

The Twin City Lines takes great pleasure in inviting you to inspect the new street cars which are soon to be added in quantity to the Twin City Transit System.

Take a Free Ride Around the Loop
THURSDAY, DECEMBER 19th - 12 to 2:30 p. m. Board the car at any point on the following streets: Starting at Washington and 2nd Avenue South, up 2nd to 6th. West on 6th to 1st Avenue North. North to Washington. East to 2nd Avenue South.

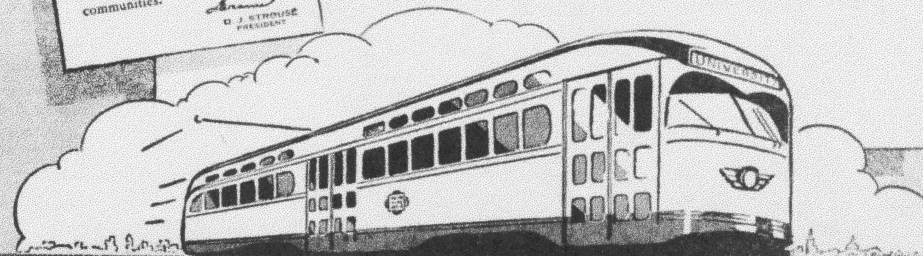
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We have commenced a modernization program to assure the finest equipment and plant available . . . estimated to cost \$20,000,000 and to be completed as soon as possible. Twin City Lines is an organization of 2,500 employees, neighbors of yours and good citizens who recognize their responsibility to serve the public graciously and well, and it is our earnest desire and pride, and shall be our constant effort that the service shall be a credit to these communities.

D. J. Strouse,
President



THE TWIN CITY LINES

As the first of the production PCCs arrived in December 1946, TCRT began promoting them. It ran a free demonstration loop in downtown Minneapolis.

Albert Johnson thought it was the most comfortable ride he'd ever had on a streetcar.

'Now all we need is for the conductor to serve coffee and cold drinks',

said Gwen Aldor. 'It's just like a club car.'

Mrs. F. F. Utecht couldn't get used to the smooth, silent motion of the new type streetcar. She kept reminding her-

self that she didn't have to talk loud to be heard as on the other streetcars.

Edward Magnussen, motorman, was getting a kick out of driving the streamliner and compared its pickup

and drive to a modern automobile.

But the man taking the fares must have enjoyed it most of all, because he said he felt like working an extra two hours. He was Alvin G. Haes who thought the light interior was restful.

A blower distributed the electrically heated air evenly and the ventilator kept the air fresh.

The only complaint was registered from Robert Herberg, who noticed there wasn't any place a guy could smoke, but reckoned that just showed how up to date the streetcar was."

The delay of the 1944 order had an upside. It caused TCRT's cars to be built to the all-electric 2.0 design. The first ones arrived in December 1946. Our car #322 was in that group, probably arriving in January 1947.

TCRT management knew that ridership would drop when World War II ended. In 1944 it had hired the transit engineering consulting firm of W. C. Gilman and Company to recommend post war changes. The consultant urged TCRT to convert entirely to buses. TCRT was conservative and service-oriented. They only partially embraced the consultant recommendations. They were committed to keeping streetcars on the heavy lines. Flush with cash from the high wartime ridership, they invested in a fleet of 140 all-electric PCCs. All were built by St. Louis Car Company.

There were three car orders.

40 cars: 300-339 delivered Dec. 1946-Jan. 1947

50 cars: 340-389 delivered Aug.-Oct. 1947

50 cars: 390-439 delivered May-July 1949

The first group was ordered with a conductor station inside the rear door and assigned to the Interurban



Above: Car 300, the first of the 140 PCCs, arrives at Snelling Shops in December 1946.

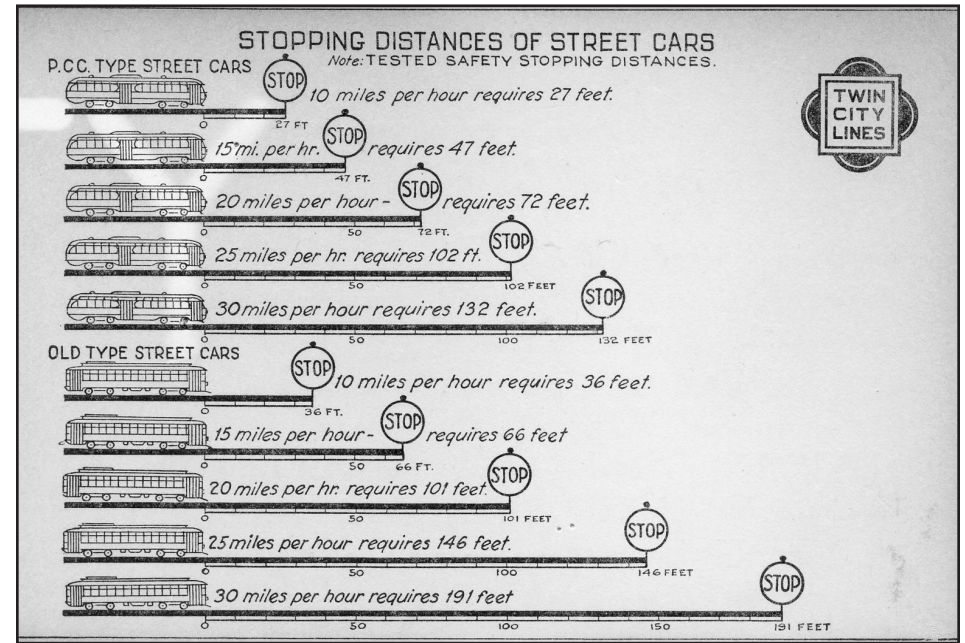
Below: Streetcars released from the shops were always tested on the Snelling Avenue line. Car 325 is at the north end of the line at Hamline and Hoyt. Kirt Blewett photo.





Above: Part of the last order of PCCs arrives at Snelling Shops in 1949. Norm Podas photo.

Below: Our museum's own #322 passes through the U of M campus on Washington Avenue. Note the absence of exterior ad signs, which ended in 1949. Dick Johnson photo.



Above: The PCCs outperformed the wood standard cars with faster acceleration and, as shown in this table, shorter braking distances.

Below: The first order of PCCs were assigned to the Interurban between the downtowns via University Avenue. Here one is passing the Montgomery Ward store east of Snelling Station. Simultaneously the Minnesota Highway Department rebuilt the St. Paul portion of University with safety islands. W. C. Whittaker photo.



(University Avenue). It says something about TCRT that they would buy new cars that could use conductors. That runs counter to every national trend, but in 1946 TCRT still used conductors on these lines:

- Interurban (University Avenue)
- Chicago-Penn-Fremont
- Como-Harriet
- Oak-Harriet
- Selby-Lake
- Nicollet-2nd Street NE
- Inter-Campus

As of October 1947, TCRT deployed 700 cars in the morning rush hour and 706 in the afternoon rush hour. The car count dropped to 324 during the midday and 219 in the evening. Obviously 141 PCC cars could only do so much. TCRT assigned them to the base service, the cars that stayed out all day. That maximized their hours, and minimized the use of the standard cars, which ranged in age from 30 to 41 years. The arrival of the PCCs allowed TCRT to retire 65 of the old cars from 1947 to 1949. After the war they purchased 36 new Mack buses and converted a couple of the lighter lines to bus in 1948, reducing the peak fleet requirement by about 50 cars.

The PCCs were deployed one line at a time.

- 12-11-46 Interurban
- 8-6-47 Bryant-Johnson and Glenwood-4th Ave.
- 10-47 Grand-Mississippi and St. Clair-Payne
- 6-1949 Hamline-Cherokee
- 7-6-49 Grand-Monroe, Bloomington-Columbia Heights, Nicollet-2nd St. NE
- 10-52 Como-Harriet and Oak-Harriet

There was some reasoning



Top left: PCCs differed from the wood standard cars by having a center door instead of a rear door, and single seats on the right side between the doors. On the ceiling note the bullseye lights, vent fans for air circulation and PA speakers. Automobile-style cranks raised and lowered the windows. Passengers used a bus-style pull cord to request a stop.

Bottom left: The motorman's compartment was a major departure from the wood cars, with foot controlled accelerator, brake and deadman pedal. The bar gave him something to do with his hands when not otherwise occupied. The raised bracket to hang a coin changer was installed at the factory. Our car #322 doesn't have it. Bill Olseon photo.

Below: The first group of PCCs had a conductor station inside the rear door. It's unclear if the others had them, and when they were removed. The University Avenue line had some conductors until the end. St. Paul Pioneer Press photo, Minnesota Historical Society collection.



behind the line-by-line deployment. In the authoritative book "PCC: The Car That Fought Back", there's a table that includes acceleration data for representative types of streetcars. A 1920s Toronto Peter Witt, which was 6% lighter than a TCRT standard car and had slightly more powerful motors, had an acceleration rate of 2.0 miles per hour per second. The rate for TCRT's PCCs was 4.75 miles per hour per second. As the graphic on Page 8 shows, the PCCs could also stop faster than the standard wood cars. The late MSM member Bob Schumacher was a TCRT motorman. Interviewed back in 1995, he said, "The PCCs could outperform a standard car by far." When the two types ran together on the same line, bunching of cars was more likely to happen. That said, it was usually impossible not to have some standard cars in rush hour tripper service mixed with the PCCs.

The assignment by line made it possible to not assign PCCs to every carhouse. The PCCs were stationed only at Snelling, Nicollet and East Side stations. Thus TCRT avoided having to train the shop crews at Duluth Avenue, Lake Street and North Side and also reduced its parts inventory by not needing to supply those stations.

According to old trolley fans, no PCCs were assigned to the Selby-Lake line because of low ground clearance. The bridge over the Milwaukee Road Short Line track east of Snelling Avenue had an abrupt vertical curve where the bridge met the two approach ramps and PCCs tended to bottom out.

Eventually Minnesota Railfans Association fan trips brought PCCs to lines that had never seen them before, including Inter-Campus, Hopkins, Mahtomedi, Chicago-Penn-Fremont, South St. Paul, Fort Snelling (West 7th Street), Plymouth-East 25th Street, Selby-Lake and Minnehaha Falls.





Opposite top: A Bryant-Johnson car crosses Minnehaha Creek on Penn Avenue. The outer end of the line was single track from 50th to 54th Streets. Don Ross photo.

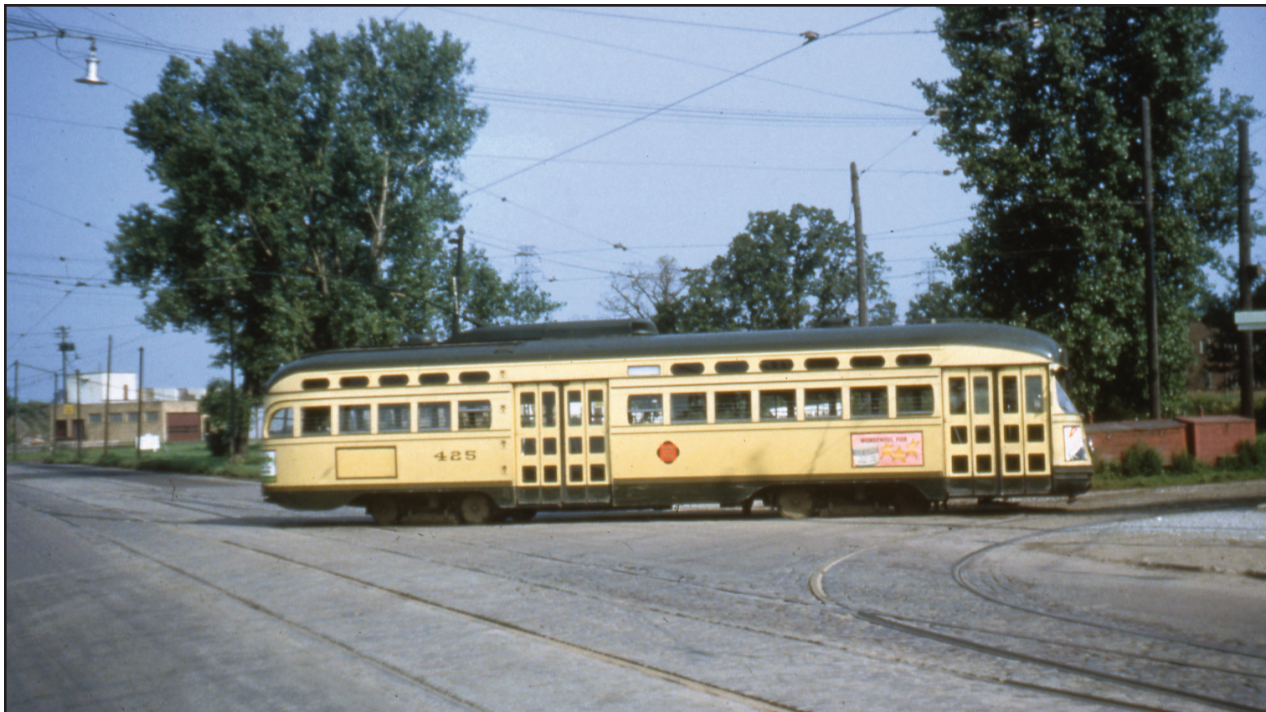
Opposite bottom: The last block of the Glenwood Avenue line entered Glenwood (now Wirth) Park and shifted from the middle of the street to this private right of way. Don Ross photo.

Top left: The St. Clair line at Snelling Avenue. Fred Howarth photo.

Top right: The Phelan Park line ended in a double track loop in the park. Norm Podas photo.

Bottom right: Looking north on Hennepin Avenue at 25th Street.





Top left: A northbound Oak-Harriet car is about to pass under the Linden Hills Blvd. bridge, where the museum carbarn is today. George Krambles photo.

Bottom left: A Como-Harriet car turns on the wye at Como & Eustis, after the St. Paul portion of the line was abandoned in 1953. Ray De Groote photo.

Top center: University Avenue was rebuilt in 1948 with safety islands. Eugene Van Dusen photo.

Top right: This is the wye at 30th & Grand Street NE, the end of the 2nd Street NE line. George Krambles photo.

Bottom far right: A 2nd Street NE car has just turned from 1st Street onto Hennepin Avenue.

Bottom right: A Hamline-Cherokee car passes a Rondo-Stryker bus on Wabasha at 4th Street.







Top left: A Nicollet Avenue car lays over in the wye at Diamond Lake Road. John Stern photo, Electric Railroaders Association collection.

Bottom left: Passenger unload at the State Office Building, across he street from the state capitol. Art Rusterholz photo.

Bottom right: It's the last year of State Fair service in 1953, with only streetcars from Minneapolis. Car 1269 has taken over as the State fair office car. Note that there's no connection to the other tracks. Apparently they brought it in every year using portable track sections. The iconic arched State Fair sign has been restored and passengers using the new bus terminal walk under it. John Runk photo, Minnesota Historical Society collection.



Top right: A University Avenue car passes the Milwaukee Road depot on Washington Avenue.
Richard Young photo.

Bottom left: In 1951 the portion of the Central Avenue line in Columbia Heights was abandoned from 40th Avenue & 5th Street to the city limits at 37th & Central. In these photos the passengers have exited and are walking across Central to board a bus for the rest of their trip. There are three tracks in the street. The nearest is for the Minneapolis Filtration Plant Railway, starting to turn right onto Reservoir Blvd.

Bottom right: The streetcar has pulled across 37th Avenue and is backing into the newly constructed wye. Note the bus behind it. Both Bill Janssen photos.





Left: A southbound Nicollet car at Marquette & 6th Street with a University Avenue car crossing in the distance on 5th Street. De Groote photo.

Bottom left: The double track wye at 5th Street & 5th Avenue N.

Top left: 4th & Wabasha with the Lowry Hotel at right.

Top center: Turning onto Wabasha in front of the state capitol. Bob Mehlenbeck photo.

Top right: Crossing 42nd Street at Lake Harriet. George Krambles photo.

Bottom right: A Hamline-Cherokee car southbound on Minnehaha Avenue at Snelling Avenue. Bob Mehlenbeck photo.

Right: A Hamline-Cherokee pullout from Snelling Station has just turned from University Avenue onto Prior Avenue.



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Above: A Grand-Mississippi car on 4th Street at Wacouta in front of the St. Paul Union Depot, followed by a Selby-Lake car. Today this is an LRT station site.
Below: Today our Como-Harriet Line car barn sits directly behind the camera. Sandy Goodrick photo.



Life after the Twin Cities

Only 4-6 years old, the PCC cars had resale value.

20 cars 340-359 were sold to Shaker Heights Rapid Transit in January 1953. Snelling Shops refurbished and painted the cars in Shaker Heights yellow with green stripes and grey roofs. They modified Cars 345-359 with couplers and controls for multiple-unit operation, meaning they could run in multi-car trains.

Public Service Coordinated Transport Company purchased 30 cars 320-339, 360-364, 415-419 to operate in Newark, New Jersey in March 1953. They were sold as is.

91 cars 299-319, 365-414, 420-439 were sold to Mexico City in August 1953. Snelling Shops refurbished and painted them green and cream.

After Nov. 6, 1953, the last PCCs ran only on Glenwood-4th Ave.

The cars' careers at their new homes

were considerably longer than in the Twin Cities. Shaker Heights ran them until 1981. They remained on the property but unused until 1990. Twelve were sold to Buffalo, New York, but never used. The Buffalo cars were sold in 2001 to a proposed Brooklyn waterfront trolley project that never got off the ground. Of that group, all were scrapped in 2005 except TCRT 360, which was sold in 2014 to a private owner in Arkport, NY.

Shaker car #63 (TCRT #352) went in 1985 to Trolleyville, the unusual private trolley museum in Cleveland located in a trailer park. The museum's collection was disbursed when the owner died, and car 63 was acquired by the Illinois Railway Museum in 2009.

A couple of the Shaker cars eventually found their way to a private collection in Pennsylvania that was essentially a streetcar junk yard. As this is written, it is being liquidated. Our museum has arranged for volunteers of the Illinois Railway Museum to strip some parts off the Shaker cars for our own PCC #322.

Mexico City ran their cars until 1984. Then they used PCC parts to create 17 new 8-axle articulated light rail cars. Those lasted until 1990. Car 2434 (TCRT 434) survives at the Museo de Transportes del Distrito Federal in Mexico City.

The Newark fleet, now owned by New Jersey Transit, ran until 2001, when it was replaced by new light rail vehicles. Interestingly, the new LRVs couldn't match the PCCs' acceleration and the schedules had to be loosened.

28 of the Twin Cities PCCs survive today. Of those, 11 are running in transit service in San Francisco and one in San Diego. In San Francisco the cars are painted for different cities that ran PCCs, including Newark, Mexico City and TCRT (see the back cover). 14 are

in museums, where two have been restored and one is under restoration. The rest are in private hands. Here's the list.

TCRT 320, New Jersey Transit 1 until 2014, North Jersey Electric Ry Society

TCRT 321, NJT 2 until 2004, San Francisco Muni painted Toronto

TCRT 322, NJT 3 until 1977, Cleveland RTA until 1990, MTM/MSM

TCRT 323, NJT 4 until 2005, City of Bayonne until 2014, Illinois Railway Museum

TCRT 324, NJT 5 until 2011, Seashore Trolley Museum

TCRT 325, NJT 6 until 2011, Rockhill Trolley Museum, restored

TCRT 326, NJT 7 until 2005, City of Bayonne until 2014, New York Museum of Transportation

TCRT 328, NJT 9 until 2004, San Francisco Muni painted Los Angeles

TCRT 329, NJT 10 until 2011, Baltimore Streetcar Museum until 2012, Rockhill Trolley Museum until 2014, San Diego Vintage Trolley, restored and operating

TCRT 330, NJT 11 until 2004, San Francisco Muni painted Detroit

TCRT 331, NJT 12 until 2004, San Francisco Muni painted DC Transit

TCRT 332, NJT 13 until 2005, City of Bayonne until 2014, North Jersey Electric Ry Society

TCRT 333, NJT 14 until 2003, San Francisco Muni painted Public Service of New Jersey

TCRT 334, NJT 15 until 2005, City of Bayonne until 2014, Connecticut Trolley Museum

TCRT 335, NJT 16 until 2014, private owner Arkport, NY

TCRT 336, NJT 17 until 2004, San Francisco Muni painted Cleveland Transit

TCRT 338, NJT 19 until 2004, San

Francisco Muni painted San Diego TCRT 339, NJT 20 until 2004, San Francisco Muni painted Mexico City

TCRT 340, NJT 21 until 2004, San Francisco Muni painted Birmingham

TCRT 352, Shaker Heights 63 until 1985, Trolleyville until 2009, Illinois Railway Museum

TCRT 361, NJT 22 until 2004, San Francisco Muni painted El Paso

TCRT 362, NJT 23 until 2004, San Francisco Muni painted TCRT

TCRT 363, NJT 24 until 2005, City of Bayonne until 2014, UTCRAS (Morton, PA) until 2018, private owner Signal Hill, CA

TCRT 364, NJT 25 until 2005, City of Bayonne until 2014, Shore Line Trolley Museum

TCRT 415, NJT 26 until 2005, City of Bayonne until 2014, Baltimore Streetcar Museum, being restored

TCRT 416, NJT 27 until 1977, Cleveland RTA until 1990, MTM until 2001, Shore Line Trolley Museum

TCRT 417, NJT 28 until 2005, City of Bayonne until 2014, North Jersey Electric Ry Society

TCRT 434, Mexico City 2434 until 1984, Museo de Transportes del Distrito Federal

The TCRT cars are not alone in being preserved. According to the online Roster of Preserved North American Electric cars, there are over 300 PCCs still among us. Extensively rebuilt, they run regular transit service in Boston, Philadelphia, Kenosha, Dallas, El Paso, San Francisco and San Diego. The majority of survivors are located at museums, and most of those are non-operational.

Here are the museums with PCCs that run:

Baltimore Trolley Museum
Connecticut Trolley Museum
Edmonton Radial Railway
Fox River Trolley Museum

Halton County Radial Railway
Illinois Railway Museum
Midwest Electric Railway (Mount Pleasant, IA)

Minnesota Streetcar Museum
Museum of Transport (St. Louis)
National Capital Trolley Museum
Oregon Electric Railway Museum
Pennsylvania Trolley Museum
Pikes Peak Historical Street Railway
Rockhill Trolley Museum
Seashore Trolley Museum
Shore Line Trolley Museum
Southern California Railway Museum

Toronto Transit Commission (special event only)

Western Railway Museum

Here are the museums with only non-operational PCCs:

Arizona Railroad Museum
Electric City Trolley Museum
Exporail (Montreal)
Heinz History Museum (Pittsburgh)
Kansas City Union Station
Michigan Transit Museum
Newtown Square Railroad Museum
New York Museum of Transportation

North Jersey Electric Railway Historical Society

Northern Ohio Railway Museum
Ohio Railway Museum
Rochester & Genesee Valley Railroad Museum

San Diego Electric Railway Museum
Shelburne Falls Trolley Museum
Southeast Pennsylvania Transit Authority Center City headquarters
Trolley Museum of New York

MSM's PCCs

In 1978 Newark sold two of its cars, #3 and 27 (TCRT #322 and 416), to Shaker Heights, which was short of equipment. They ran at Shaker until 1981, then sat unused in the weather until 1990. We wanted them, because

they had the original seats. All the cars that stayed in Newark received new seats.

George Isaacs led the PCC acquisition effort, and later the restoration itself. He knew Ed Allen, chief mechanical office for Cleveland Regional Transit Authority. Allen had previously been with Iowa Traction in Mason City. Despite multiple requests, Allen wouldn't sell the PCCs. Frustrated, Isaacs enlisted the help of Metro Transit, where several MSM volunteers worked.

When the Newark line was acquired by New Jersey Transit, all the assets were purchased with federal money. The law allowed federally funded assets to be transferred between transit systems. Metro Transit's General Manager requested the two PCCs from his Cleveland's counterpart, who agreed to the transfer. Metro Transit in turn donated them to our museum in 1990. Metro Transit then let us restore car 322 for five years inside its Overhaul Base. That not only provided a great work space, but several of the shop employees became involved in the project. Howie Melco remains a volunteer to this day.

We didn't need car 416, and traded it to the Shore Line Trolley Museum for some parts. It took nine years to restore car 322, the last four at Lake Harriet. Due to rust, the floor, stepwells, doors, quite a bit of sheet metal and the bottoms of all the seat legs had to be replaced. It had been in both front and rear collisions and needed body work. Cleveland had installed lexan plastic windows which were all scratched up. We replaced all of them with windows from a Chicago PCC-type L car. The car was completely rewired.

Car 322 was completed and began operating in 2000.



The Minnesota Railfans Association fantrips took PCCs where they had never been before.

Top left: Entering Minnehaha Park. Eugene Van Dusen photo.

Bottom left: They covered the Chicago-Fremont line after it had been converted to bus but the city still required monthly franchise runs by streetcars. This is 54th and Chicago. G. M. Anderson photo.

Below: Trolley fans are notorious for wanting to experience rare mileage, hence this diversion up the freight interchange track on the Inter-Campus line. Bob Schumacher photo.

Opposite top: At Hamline Lake near the end of the Mahtomedi line.

Opposite bottom: A photo stop was made in the cut just west of Blake Road on the Hopkins line. Jim Kreuzberger photo.





The 30 cars that went to Public Service Coordinated Transport in Newark were sold as is.

Above: Arrival at the Newark shops.

Below: The 5-mile line still runs today. Although called the Newark Subway, most of it was built in 1935 in the abandoned bed of the Morris Canal. Greer Nielsen photo.





Above: Painted and renumbered 51 for Shaker Heights, TCRT #340 is ready to depart Snelling Shops.

Below: Of the 20 cars that went to Shaker Heights, Snelling Shops modified 15 of them with couplers and control changes to permit operation in multi-car trains. Jim Kreuzberger photo.



Above and below: Mexico City bought 91 PCCs, including car 299. They kept the TCRT numbers and added a 2 in front. During their careers they had several color schemes and were extensively rebuilt with left hand doors and new windshields.

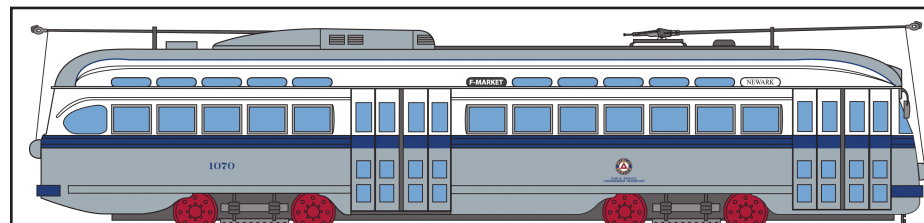
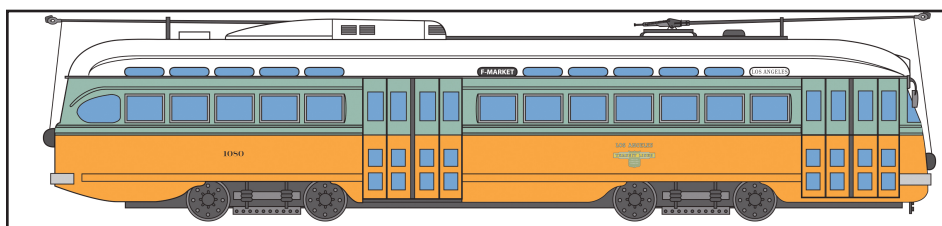
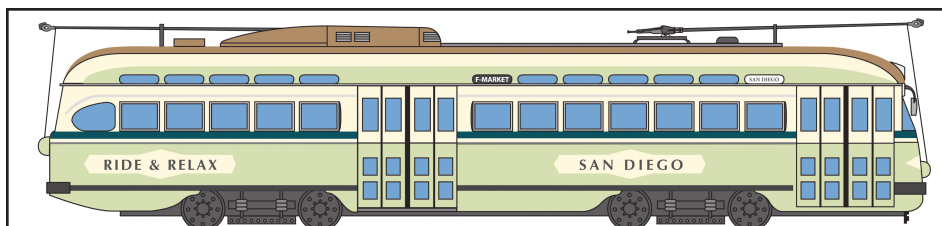
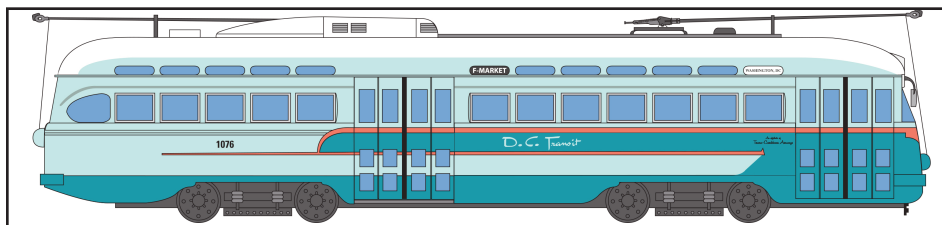
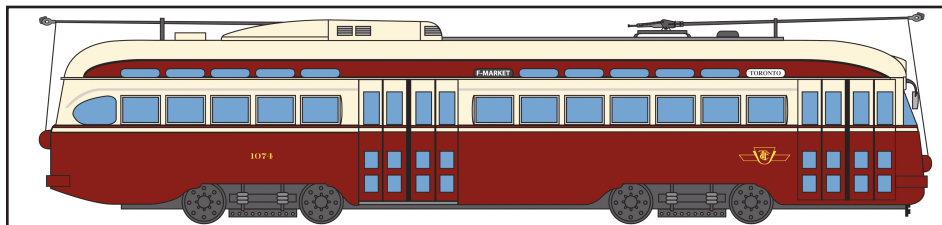
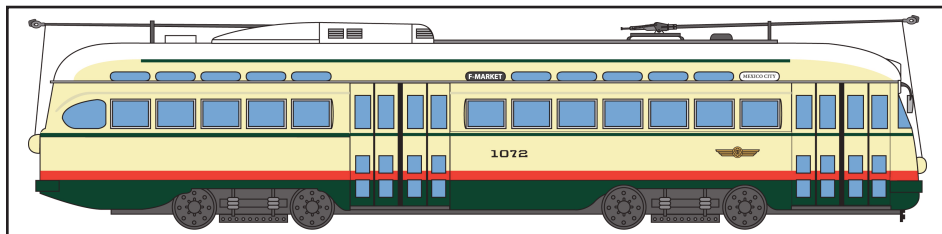
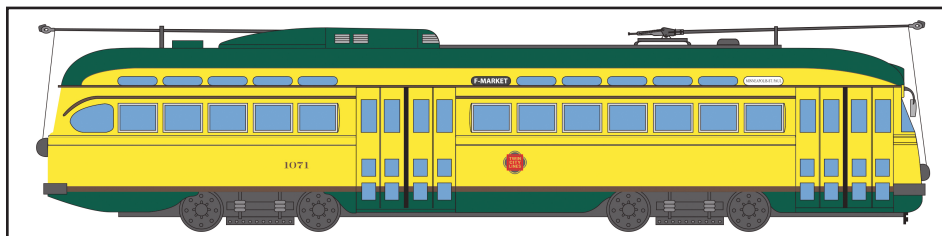




Twin City PCCs are now preserved at ten trolley museums.
 Above: Our car 322 in service as Newark #3.
 Below: Baltimore Streetcar Museum's Matt Nawn poses with Newark #26 (TCRT #415), which is in mid-restoration, including rebuilding the trucks to Baltimore's wider 5 ft. 4 1/2 in. track gauge. Andy Blumberg photo.

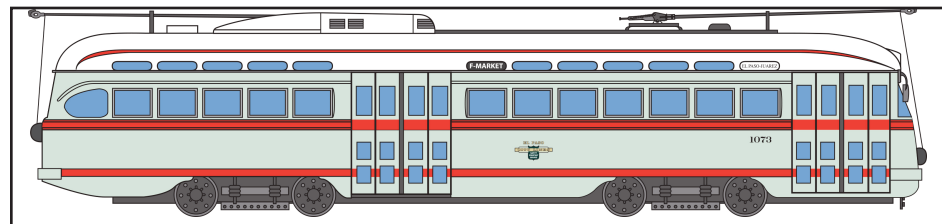


Top: Our car 322.
 Above: Rockhill Trolley Museum in Pennsylvania was the first to restore a Newark PCC (TCRT #325) after they were dispersed.
 Left: The only surviving Mexico City car is ex-TCRT #434 at the Museo de Transportes del Distrito Federale.



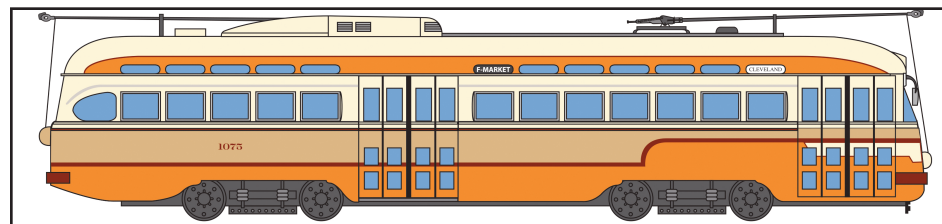
Top left: Twin Cities, 2nd left: Mexico City

Above: Newark, New Jersey



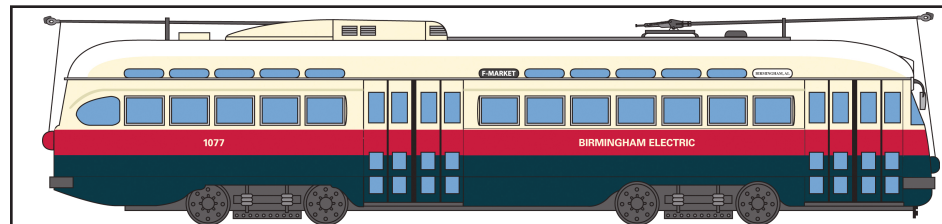
Left: Toronto

Above: El Paso



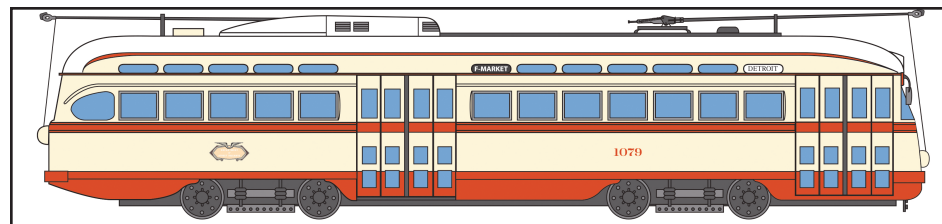
Left: Washington, DC

Above: Cleveland



Left: San Diego

Above: Birmingham, Alabama



Left: Los Angeles
Above: Detroit

The 11 ex-Twin City PCCs running in San Francisco have been painted in the colors of cities that ran PCCs. David Dugan drawings, courtesy Market Street Railway.



MINNESOTA STREETCAR MUSEUM

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August 2021

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